

Comparability of Biological Assessment Methods – Prince George's County and the Maryland Biological Stream Survey

Erik W. Leppo¹, James B. Stribling¹, and Sharon Meigs²

¹Tetra Tech, Inc., 10045 Red Run Boulevard, Suite 110, Owings Mills, MD 21117-6103

²Prince George's County, Programs and Planning Division, Department of Environmental Resources, 9400
Peppercorn Drive, Largo, Maryland 20774

Biographical Sketches of Authors

Mr. Erik Leppo is a biologist in Tetra Tech's Baltimore Office. He has 10 years of experience collecting and analyzing biological data for use within the biological indicators framework.

Dr. James Stribling is a biologist in Tetra Tech's Baltimore Office and a Director in the Center for Ecological Sciences. He has over 20 years of experience in the development and calibration of biological indicators for assessment of water resource quality. An integral part of that process is ensuring that implementation of routine monitoring programs using those indicators is directly applicable to technical and programmatic objectives.

Sharon Meigs works in the Programs and Planning Division of Prince George's County, Maryland Department of Environmental Resources. Since 1999 she has served as the project manager of the County's biological monitoring program.

Abstract

To make any statement of comparability between biological monitoring and assessment protocols, attention must be given to characterizing random and systematic error that can arise not only from sample to sample within a method, but between methods even when monitoring the same locations. If internal method error sources and the resulting variability are not documented and accounted for, the fact that similar assessments were attained may be no more than a random phenomenon. Thus, we hold that sufficient information for analysis of method comparability must include documentation of 1) the performance characteristics of a method (what a method is capable of), and 2) the fact that an existing dataset represents those characteristics (how a method actually performed). To examine method and data comparability between Prince George's County Department of Environmental Resources (DER) and the Maryland Biological Stream Survey (MBSS), 15 sites were sampled by both agencies during the same index period (Spring 2001). Benthic macroinvertebrate samples were collected by both agencies using similar field methods, and assessments performed using the same multimetric index; however, there were differences in reach length, specific subsampling procedures, taxonomists, and data entry QC.

While methods performed equally well (intra-method) and arrived at similar final assessments (inter-method), there were several differences that could be attributed to field methods (variability of sample unit allocation), laboratory procedures (subsampling and taxonomy), and database management (metric calculation). In this paper, we discuss similarities and differences in the methods, and evaluate the acceptability of combining these datasets.